

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/525,477

*A1
cont.*
laminated film in which a metallic layer having extremely low vapor permeability and extremely low gas permeability is laminated on a high polymer film, a high polymer film having extremely low vapor permeability and extremely low gas permeability, or the like.

A2
/ On page 14, please delete the first full paragraph and replace it with the following paragraph:

When printing is started in this state and ink is consumed by the recording head 94, pressure in the groove 44 forming the ink passage is decreased to maintain ink supplied to the recording head 4 at fixed negative pressure. As ink is further consumed, negative pressure is increased. Therefore, differential pressure acting on the membrane part 54 is increased as shown in Fig. 6(b), the membrane part 54 retracts against the spring 51 to separate the ink flow port 54a from the valve seat 57c, thereby forming a gap g.

IN THE CLAIMS:

A3
Please cancel claims 7-10, 29-37, 40-45, and 47-57 without prejudice or disclaimer.

Please enter the following amended claims:

Sub
1 (Amended) An ink-jet recording device comprising:
a body;
a carriage movable relative to the body,
an ink-jet recording head provided to said carriage, and
an ink supply device mounted to said carriage for supplying ink to said recording head,
wherein:

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Sub B cont ~~said ink supply device is constructed as a differential pressure valve including a coil spring, a valve seat and a movable membrane normally contacted elastically with said valve seat by said coil spring.~~

A3
cont

Sub C

2. (Amended) The ink-jet recording device according to Claim 1, wherein:

~~said ink supply device is mountable to said carriage and provided with an ink storage area.~~

A4

4. (Amended) The ink-jet recording device according to Claim 2, wherein:

~~said movable membrane is arranged in parallel to a plane perpendicular to a direction in which said carriage is moved; and~~

~~a plurality of ink supply devices are mounted to said carriage and arranged adjacent to one another in the direction in which said carriage is moved.~~

6. (Amended) The ink-jet recording device according to Claim 2, wherein:

~~a main tank having ink is installed on the body; and~~

~~a conduit adapted between said main tank and said ink supply device conveys ink from said main tank to said ink supply device.~~

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Subj

11. (Amended) The ink-jet recording device according to Claim 2, wherein:

said ink supply device is provided with an ink injection port; and

an ink supplementing device is provided within a range where said carriage is moved and in a non—printing area, said ink supplementing device being detachably contacted with said ink injection port for injecting ink.

A⁶

Subj
B27

12. (Amended) An ink supply unit, comprising:

a differential pressure valve including a coil spring and a movable membrane normally contacted elastically with a valve seat by said coil spring, is accommodated in a container having an ink storage chamber and an ink supply port;

wherein the ink storage chamber communicates with the ink supply port; and

wherein the ink supply port is adapted to be connected to an ink-jet recording head.

Subj
Cont

16. (Amended) An ink supply unit, comprising:

a differential pressure valve including a coil spring and a movable membrane normally contacted elastically with a valve seat by said coil spring is accommodated in a container having an ink storage chamber and an ink supply port;

wherein the ink storage chamber communicates with the ink supply port; wherein the ink supply port is adapted to be connected to an ink-jet recording head;

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*Sub
cont*

wherein said movable membrane is a disc-like elastic membrane formed at a center of said differential pressure valve with an ink flow port;

wherein said valve seat is located on an upstream side of ink flow and facing said ink flow port; and

wherein said coil spring is located on a downstream side and pressing said ink flow port of said movable membrane onto said valve seat.

*A7
cont*

17. (Amended) The ink supply unit according to Claim 12, wherein:

a spring holder is disposed between said coil spring and said movable member; and

wherein said movable membrane receives pressure of said coil spring via the spring holder.

18. (Amended) The ink supply unit according to Claim 12, wherein:

said container includes a frame-like casing provided at its side surface with a window, and an air intercepting film sealing said window.

25. (Amended) The ink supply unit according to Claim 12, wherein:

said movable membrane is provided with a movable part; and

an annular bent part is formed in the vicinity of an outer periphery of said movable part.

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A9 Sub B10
46. (Amended) The ink supply unit according to Claim 12, wherein:

a film member having both gas permeability and ink repellent properties is interposed between said capillary and said ink storage chamber.

Please add the following new claims:

Sub C10
60. (New) The ink supply unit according to Claim 22, wherein:

an annular bent part is formed in the vicinity of an outer periphery of said movable part.

61. (New) The ink supply unit according to Claim 24, wherein:

an annular bent part is formed in the vicinity of an outer periphery of said movable part.

62. (New) The ink-jet recording device of claim 1, wherein said movable membrane is disposed between said valve and said coil spring, and

wherein said coil spring urges said movable membrane against said valve seat.

63. (New) The ink-jet recording device of claim 1, wherein said valve seat is fixed with respect to said ink supply device.

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Sub Cont

64. (New) The ink supply unit of claim 12, wherein said movable membrane is disposed between said valve and said coil spring, and

wherein said coil spring urges said movable membrane against said valve seat.

65. (New) The ink supply unit of claim 12, wherein said valve seat is fixed with respect to said ink supply device.

66. (New) An ink-jet printing cartridge comprising:

~~A10~~
~~CONT.~~

n ink storage chambers wherein at least one of the n ink storage chambers is located substantially below another one of the n ink storage chamber, wherein n is greater than 1;

an ink supply port; and

a negative pressure valve disposed between said n ink storage chambers and the ink supply port and controls ink flow to said ink supply port from said n ink storage chambers;

wherein at least one of said n ink storage chambers has an outlet passage located in a lower portion of said at least one n ink storage chamber;

wherein ink stored in the n ink storage chambers is depleted sequentially beginning with the first ink storage chamber and ending with said nth ink storage chamber.

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*Sub
Claim*

67. (New) The ink-jet printing cartridge of claim 66, wherein said ink flows sequentially from said first ink storage chamber to said n^{th} ink storage chamber; and
wherein in said ink flows from said n^{th} ink storage chamber to said negative pressure valve.

*A 10
Cont.*

68. (New) The ink-jet printing cartridge of claim 66, wherein said ink flows from an ink storage chamber which is lower than said negative pressure valve.

69. (New) The ink-jet printing cartridge of claim 66, wherein said negative pressure valve further comprises a movable membrane normally contacted elastically with a valve seat by a coil spring.

70. (New) The ink-jet printing cartridge of claim 69, wherein said movable membrane is disposed between said valve seat and said coil spring; and
wherein said coil spring urges said movable membrane against said valve seat.

71. (New) The ink-jet printing cartridge of claim 66, wherein a filter is disposed between an upper ink storage chamber and the negative pressure valve.